Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (currently amended) A method of visually documenting historical changes in biological tissue, comprising the steps of:

(a) obtaining a first image of a region of tissue;

(b) obtaining pathological feature data for said region of tissue;

(~~b~~c) ~~after obtaining said first image,~~ obtaining a second image of said region of tissue using a first level of resolution;

(~~c~~d) digitally storing said first and second images as digitized first and second images;

(~~d~~e) spatially adjusting at least one of said first and second digitized images to spatially register said images so that corresponding features in both images are mapped to corresponding positions; ~~and~~

(f) correlating said pathological feature data with said second image to define a historical region-of-interest (ROI) in said second image;

(g) rescanning the defined ROI using a second level of resolution higher than said first level of resolution to obtain a third image;

(h) spatially adjusting at least one of said historical and rescanned ROI images to spatially register said ROI images so that corresponding features in both images are mapped to corresponding positions; and

(~~e~~i) creating from said historical ~~first~~ and ~~second~~ rescanned ROI ~~digitized~~ images a composite~~derived~~ image which

visually emphasizes temporal differences between said ROI images ~~first and second images~~, thereby visually emphasizing historical changes between said ~~images~~ historical and rescanned ROI images.

2. (original) The method of claim 1, wherein said step of spatially adjusting at least one of said first and second digitized images comprises:

determining a coordinate transformation which produces at least a pre-determined degree of correlation between said first and second digitized images; and

applying said coordinate transformation to at least one of said first and second digitized images, to align said images.

3. (currently amended) The method of claim 2, wherein said coordinate transformation is determined by:

(a) applying ~~a plurality of~~ coordinate transformations of scale, position and rotation to one of said first and second digitized images, to obtain a plurality of corresponding adjusted images;

(b) cross-correlating said adjusted images with one of said first and second digitized images, to produce a correlation output; and

(c) selecting a coordinate transformation which produces at least a defined correlation output from its corresponding adjusted image.

4. (original) The method of claim 3, wherein said step of cross-correlating comprises:

inputting said first and second images to an optical correlator, and

reading said correlation output from an output of said optical correlator.

5. (currently amended) The method of claim 1~~2~~, further comprising the step of recording said composite~~derived~~ image for archiving.

6. (original) The method of claim 5, wherein said step of recording comprises storing said composite image on a computer readable medium.

7. (original) The method of claim 5, wherein said step of recording comprises printing an image based upon said composite image.

8. (currently amended) The method of claim 1~~2~~, wherein at least one of said historical and rescanned ROI images~~first image and second image~~ is a three-dimensional image.

9. (currently amended) The method of claim 1, wherein said step of creating a composite image comprises:

comparing an image intensity at a location in said historical ROI ~~first~~ image with a respective intensity at a corresponding location in said rescanned ROI ~~second~~ image, and

determining a temporal difference image value based upon the temporal difference between said image intensity at said location in said historical ROI ~~first~~ image and the respective intensity at said corresponding location in said rescanned ROI ~~second~~ image.

10. (currently amended) The method of claim 1, wherein said composite image visually emphasizes temporal image differences by representing various regions of said composite image in synthetic colors, based upon temporal image differences between the historical~~first~~ and rescanned~~second~~ ROI images.

11. (cancelled) A method of creating a displayable composite mammographic image from a plurality of raw mammographic images, corresponding to earlier and later mammographic images, comprising the steps of:

(a) obtaining the earlier image of a region of tissue;

(b) obtaining the later image of substantially the same region of tissue;

(c) deriving a temporal difference image which represents changes between said earlier and later images; and

(d) combining at least one of said earlier and later images with said temporal difference image, to produce a composite image.

12. (cancelled) The method of claim 11, further comprising the step of recording said composite image for archiving.

13. (cancelled) The method of claim 12, wherein said step of recording comprises storing said composite image on a computer readable medium.

14. (cancelled) The method of claim 12, wherein said step of recording comprises printing an image based upon said composite image.

15. (cancelled) The method of claim 11, wherein at least one of said earlier and later images is a three dimensional

image model.

16. (cancelled) The method of claim 11, wherein said step of creating a composite image comprises:

spatially adjusting at least one of said earlier and later images to aid in registering said images.

17. (cancelled) The method of claim 16, wherein said step of spatially adjusting at least one of said earlier and later images comprises:

determining a coordinate transformation which produces a desired degree of correlation between said earlier and later images; and

applying said coordinate transformation to at least one of said earlier and later images, to align said images.

18. (cancelled) The method of claim 17, wherein said coordinate transformation is determined by:

(a) applying a plurality of coordinate transformations to one of said earlier and later images, to obtain a plurality of corresponding adjusted images;

(b) cross-correlating said adjusted images with one of said earlier and later images, to produce a correlation output; and

(c) selecting a coordinate transformation which produces a defined correlation output from its corresponding adjusted image.

19. (currently amended) A system for enhancing imagery of bodily tissues by relating earlier and later images, comprising:

an image processor, programmed to:

(a) receive a first image of a region of tissue ~~said earlier and later images,~~;

(b) obtain pathological feature data for said region of tissue;

(c) obtain a second image of said region of tissue using a first level of resolution;

(d~~b~~) register the first~~earlier~~ and second~~later~~ images by controlling an optical correlator to find a position of correlation between said first~~earlier~~ and second~~later~~ images~~,~~;

(e) correlate said pathological feature data with said second image to define a historical region-of-interest (ROI) in said second image;

(f) rescan the defined ROI using a second level of resolution higher than said first level of resolution to obtain a third image;

(g) register said historical and rescanned ROI images by controlling an optical correlator to find a position of correlation between said historical and rescanned ROI images;

(~~e~~h) derive a composite image from the historical and rescanned ROI ~~earlier and later~~ images~~,~~;

(i~~d~~) compute temporal differences between said historical and rescanned ROI ~~earlier and later~~ images~~,~~; and

(je) emphasize said temporal differences in said composite image; and

an optical correlator coupled to said image processor and arranged to perform said correlations ~~correlate said earlier and later images, and to output to said image processor a cross correlation image which is indicative of the position of correlation of the processed images~~.

20. (cancelled) The system of claim 19, wherein said image

processor is further programmed to compute temporal differences between said earlier and later images and to emphasize said temporal differences in said composite image.

21. (original) The system of claim 19, further comprising a visual display, coupled to said image processor and receiving from said image processor said composite image, to permit a user to view said composite image.

22. (currently amended) The system of claim 19, further comprising an ultrasonographic imaging system, arranged to communicate ultrasonographic image data to said image processor to provide at least one of said first and second~~earlier and later~~ images.

23. (cancelled) The method of claim 4, wherein said step of creating a composite image comprises:

comparing an image intensity at a location in said first image with a respective intensity at a corresponding location in said rescanned ROI image, and

determining a temporal difference image value based upon said correlation output values.

24. (new) The method of claim 1, wherein said pathological feature data is obtained by manually analyzing said first image.

25. (new) The method of claim 1, wherein said pathological feature data corresponds to predetermined image shapes or characteristics retrieved from a pathological image library.

26. (new) The method of claim 1, wherein said pathological feature data is obtained by automated analysis of said first

image.

27. (new) The method of claim 1, wherein said second image is obtained using ultrasonic imaging.

28. (new) The method of claim 1, wherein both of said historical and rescanned ROIs are three-dimensional volume regions which are aligned by registration in three dimensions.